

REMARKS

This Amendment is being filed with a Request for Continued Examination. Claims 1 and 15 have been amended to more clearly recite Applicants' invention. Claims 28-34 have been cancelled without disclaimer of the subject matter contained therein or prejudice to the Applicants' right to file any continuing applications directed thereto. Claims 35-44 have been added. Upon entry of this Amendment, Claims 1-27, and 35-42 are pending, with claims 3, 13, 18, and 26 being withdrawn from consideration at this time. Support for the amendments to claim 1 and 15, and for new claims 35-44 may be found in the specification, at least, at paragraphs [0039] – [0041] and [0046] – [0047]. No new matter has been added.

In the Office Action dated January 11, 2005, claims, 1, 2, 4, 11, 14-17, 19, and 27 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,796,447 to Laundry et al. (hereinafter “the ‘447 patent”). Applicants respectfully traverse this rejection.

Independent claim 1 of the present application, as amended, recites an intelligent assist device that includes, *inter alia*, “a controller operatively coupled with the sensor and the trolley, the controller controlling movements of the trolley, the controller estimating an amount of oscillation in the support in a higher frequency band and adjusting movements of the trolley based thereon, wherein the higher frequency band is above a lower frequency band that contains the lowest natural frequency mode of oscillation of the device.” The ‘447 patent does not disclose or suggest these features.

As explained by Applicants' specification at [0039] and [0040], there are two natural modes of vibration of a typical cable based IAD. The lowest frequency mode includes the frequency of the swinging motion of the support that is in phase with the swinging motion of the payload, as illustrated by FIG. 3a. The higher frequency mode includes the frequency in which the two swinging motions are out of phase with one another, as illustrated by FIG. 3b. Moreover, Applicants explain that there are even higher frequency modes that are associated with torsional oscillation in the overhead rail.

The ‘447 patent does not even discuss frequency modes or bands. Applicants respectfully submit that the pendulum effects that the Examiner discusses in the Office Action at page 6 are also contained within this lower frequency mode, as the lifted load swings back and forth in phase with the cable. Nowhere does the ‘447 patent disclose or even suggest that there is a higher frequency mode of vibration.

As such, nowhere does the ‘447 patent even remotely suggest that the control system estimates an amount of oscillation in the support in a higher frequency band that is above a

lower frequency band that contains the lowest natural frequency mode of oscillation of the device, and adjusts movements of the trolley based thereon, as recited by claim 1. Accordingly, Applicants submit that independent claim 1 and claims 2-14 that depend from claim 1 are patentable over the '447 patent and respectfully request that the rejection be withdrawn.

Independent claim 15 of the present application, as amended, recites a method for controlling movement of an overhead moveable trolley in an intelligent assist device that includes, *inter alia*, "estimating an amount of oscillation in a higher frequency band; and adjusting movements of the trolley based upon the estimate, wherein the higher frequency band is above a lower frequency band that contains the lowest natural frequency mode of oscillation of the device." The '447 patent does not disclose or suggest these features.

As discussed above, Applicants' specification discloses that the lowest frequency mode includes the frequency of the swinging motion of the support that is in phase with the swinging motion of the payload, as illustrated by FIG. 3a; this is the same type of motion, and, hence, frequency mode, that is described by the '447 patent. The '447 teaches estimating the motion imparted to the support by the operator, and adjusting the movement of the crane based on the estimated force applied by the operator. The pendulum effects that the Examiner discusses in the Office Action at page 6 are also contained within this lower frequency mode, as the lifted load swings back and forth in phase with the cable. Nowhere does the '447 patent disclose or even suggest that there is a higher frequency mode of vibration. Accordingly, Applicants submit that independent claim 15 and claims 16-27 that depend from claim 15 are patentable over the '447 patent and respectfully request that the rejection be withdrawn.

In the Office Action, claims 1 and 15 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,575,317 to Taylor (hereinafter "the '317 patent"). Applicants respectfully traverse this rejection.

Amended claim 1 is discussed above. The '317 patent does not disclose or suggest all of the features recited by claim 1. Like the '447 patent, the '317 discusses a pendulum effect of the lifted load swinging back and forth, and does not disclose a higher frequency mode, or a higher frequency band that is above a lower frequency band that contains the lowest natural frequency mode of oscillation of the device. As such, the '317 does not disclose or suggest "a controller operatively coupled with the sensor and the trolley, the controller controlling movements of the trolley, the controller estimating an amount of oscillation in the support in

a higher frequency band and adjusting movements of the trolley based thereon, wherein the higher frequency band is above a lower frequency band that contains the lowest natural frequency mode of oscillation of the device,” as recited by claim 1. Accordingly, Applicants submit that independent claim 1 and claims 2-14 that depend from claim 1 are patentable over the ‘317 patent and respectfully request that the rejection be withdrawn.

Amended independent claim 15 is discussed above. The ‘317 patent does not disclose or suggest all of the features of claim 15. As discussed above, the ‘317 patent does not disclose or suggest that there are two frequency modes in the system, i.e., nowhere does the ‘447 patent disclose or even suggest that there is a higher frequency mode of vibration. The pendulum effects described by the ‘317 patent are contained within what Applicants have described as the lower frequency mode, as the lifted load swings back and forth in phase with the cable. Thus the ‘317 patent does not disclose or suggest “estimating an amount of oscillation in a higher frequency band; and adjusting movements of the trolley based upon the estimate, wherein the higher frequency band is above a lower frequency band that contains the lowest natural frequency mode of oscillation of the device,” as recited in claim 15. Accordingly, Applicants submit that independent claim 15 and claims 16-27 that depend from claim 15 are patentable over the ‘317 patent, and respectfully request that the rejection be withdrawn.

In the Office Action, claims 5-7, 9, 10, 20-22, 24, and 25 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the ‘447 patent in view of U.S. Patent No. 6,460,711 to Kato et al. (hereinafter “the ‘711 patent”). Applicants respectfully traverse this rejection.

Claims 5-7, 9, and 10 depend from independent claim 1. As discussed above, independent claim 1 is patentable over the ‘447 patent. The ‘711 patent does not cure the deficiencies of the ‘447 patent. The ‘711 patent teaches a suspension type hoisting apparatus that is able to suppress sway of a part of the apparatus in a short time. (‘711 patent at col. 6-10.) Like the pendulum motions described by the ‘447 patent, Applicants respectfully submit that the “sway” described by the ‘711 patent, and illustrated in FIG. 3A, also fall within the lower frequency band. Nowhere does the ‘711 patent disclose that there is a higher frequency mode, or “a controller operatively coupled with the sensor and the trolley, the controller controlling movements of the trolley, the controller estimating an amount of oscillation in the support in a higher frequency band and adjusting movements of the trolley based thereon, wherein the higher frequency band is above a lower frequency band that contains the lowest

natural frequency mode of oscillation of the device,” as recited by claim 1. Accordingly, Applicants submit that claims 5-7, 9, and 10 are patentable over the ‘447 patent in view of the ‘711 patent, and respectfully request that the rejection be withdrawn.

Claims 20-22, and 24 depend from independent claim 15. As discussed above, independent claim 15 is patentable over the ‘447 patent. The ‘711 patent does not cure the deficiencies of the ‘447 patent. The ‘711 patent does not disclose or suggest “estimating an amount of oscillation in a higher frequency band; and adjusting movements of the trolley based upon the estimate, wherein the higher frequency band is above a lower frequency band that contains the lowest natural frequency mode of oscillation of the device,” as recited by claim 15. Accordingly, Applicants submit that claims 20-22, and 24 are patentable over the ‘447 patent in view of the ‘711 patent, and respectfully request that the rejection be withdrawn.

In the Office Action, claims 8 and 23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the ‘447 patent in view of the ‘711 patent, and further in view of U.S. Patent No. 4,284,978 to Yucius (hereinafter “the ‘978 patent”). Applicants respectfully traverse this rejection.

Claim 8 depends from independent claim 1. As discussed above claim 1 is patentable over the ‘447 patent and the ‘711 patent. The ‘978 patent does not cure the deficiencies of the ‘447 and ‘711 patents. The ‘978 patent discloses a control system for a conveying or hoist system. (‘978 patent, col. 1, lns. 5-13.) The ‘978 patent does not disclose or suggest that there is a sensor that senses a characteristic of motion imparted by a human operator to the device, or “a controller operatively coupled with the sensor and the trolley, the controller controlling movements of the trolley, the controller estimating an amount of oscillation in the support in a higher frequency band and adjusting movements of the trolley based thereon, wherein the higher frequency band is above a lower frequency band that contains the lowest natural frequency mode of oscillation of the device,” as recited by claim 1. Accordingly, Applicants submit that claim 8 is patentable over the ‘447 patent in view of the ‘711 patent, and further in view of the ‘978 patent, and respectfully request that the rejection be withdrawn.

Claim 23 depends from claim 15. As discussed above, claim 15 is patentable over the ‘447 patent and the ‘711 patent. The ‘978 patent does not cure the deficiencies of the ‘447 and ‘711 patents. The ‘978 patent does not disclose or suggest “estimating an amount of oscillation in a higher frequency band; and adjusting movements of the trolley based upon the

estimate, wherein the higher frequency band is above a lower frequency band that contains the lowest natural frequency mode of oscillation of the device,” as recited in claim 15. Accordingly, Applicants submit that claim 23 is patentable over the ‘447 patent in view of the ‘711 patent, and further in view of the ‘978 patent, and respectfully request that the rejection be withdrawn.

In the Office Action, claim 12 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the ‘447 patent in view of U.S. Patent No. 6,668,668 to Peshkin (hereinafter “the ‘668 patent”). Applicants respectfully traverse the rejection.

Claim 12 depends from independent claim 1. As discussed above, claim 1 is patentable over the ‘447 patent. The ‘668 patent does not cure the deficiencies of the ‘447 patent. The ‘668 patent teaches a method and device for determining the forces applied to a support member or cable. (‘668 patent at col. 1, lns. 5-7.) The ‘668 patent does not disclose or suggest “a controller operatively coupled with the sensor and the trolley, the controller controlling movements of the trolley, the controller estimating an amount of oscillation in the support in a higher frequency band and adjusting movements of the trolley based thereon, wherein the higher frequency band is above a lower frequency band that contains the lowest natural frequency mode of oscillation of the device,” as recited by claim 1. Accordingly, Applicants submit that claim 12 is patentable over the ‘447 patent in view of the ‘668 patent, and respectfully request that the rejection be withdrawn.

Applicants respectfully submit that new claims 35-38 depend from claim 1, and are patentable over the references of record for at least the same reasons discussed above in regard to claim 1. New claims 39-42 depend from claim 15, and are likewise patentable over the references of record for at least the same reasons discussed above in regard to claim 15.

Applicants respectfully submit that new independent claim 43 is patentable over the references of record because none of these references disclose or suggest an intelligent assist device that includes, *inter alia*, a controller operatively coupled with the sensor and the trolley, the controller estimating an amount of oscillation in the support in a frequency mode in which the support and the payload swing out of phase with one another, and adjusting movements of the trolley based thereon.

Applicants respectfully submit that new independent claim 44 is patentable over the references of record because none of these references disclose or suggest an intelligent assist device that includes, *inter alia*, a controller operatively coupled with the sensor and the trolley, the controller estimating an amount of oscillation in the support in a frequency mode

associated with a torsional oscillation of the overhead rail, and adjusting movements of the trolley based thereon.

All rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited. If any point remains in issue which the Examiner feels may be best resolved through a personal or telephone interview, please contact the undersigned at the telephone number listed below.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,

PILLSBURY WINTHROP
SHAW PITTMAN LLP



EMILY T. BELL

Reg. No. 47,418

Tel. No. 703.905.2261

Fax No. 703.905.2500

Date: April 11, 2005
P.O. Box 10500
McLean, VA 22102
(703) 905-2000